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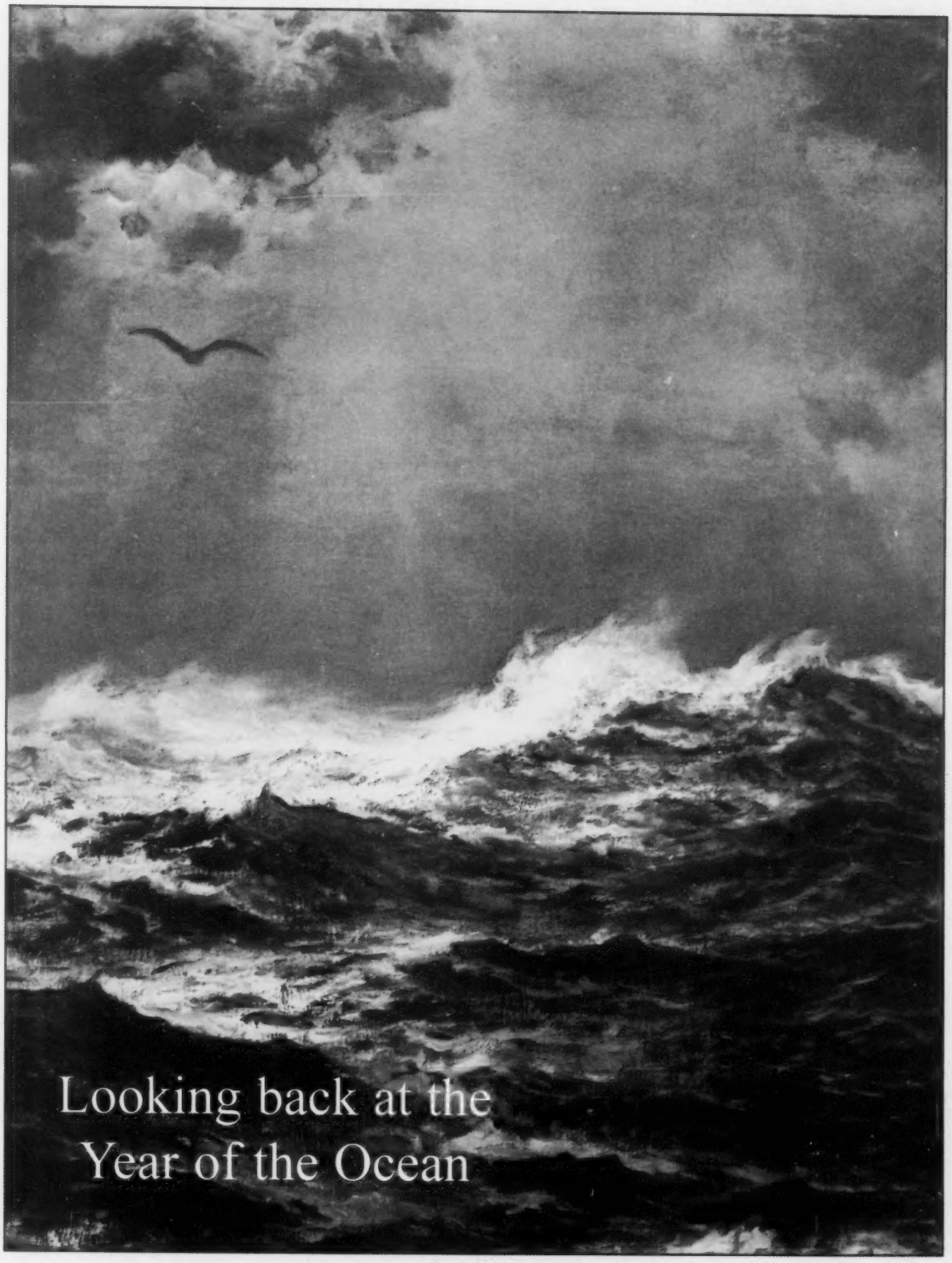

Looking back at the Year of the Ocean

UNITED STATES NAVY
NAVAL FACILITIES ENGINEERING COMMAND

UNITED STATES NAVY
CIVIL ENGINEER CORPS

SEABEES

Cover:
The Ocean-Highway of all Nations by Edward Moran (From the Collection of the U.S. Naval Academy Museum)

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Fall 1998/Winter 1999 Vol. XXXVI Issue 2

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Features

3 **The International Year of the Ocean**
By Macara Lousberg

5 **NAVFAC's Maritime Vessel *Independence***
By Dave Wicklund

7 **Supporting the fleet with magnetic silencing capabilities**
By Lonnie Winkleman and Martin Gaffey

12 **The joy of maneuvering in sea state three**
By Peter Tabor

15 **Ford Island Bridge becomes a reality**
By LT Peter O'Hara, CEC, USN, Don Rochon and Grace HewLen

20 **Nomans Land designated as wildlife refuge**
By Heather MacDonough

22 **Hurricane Bonnie: A PWC perspective**
By LCDR Chris Kiwus, CEC, USN, Ph.D., P.E.

Departments

2 Speaking from Topside

23 85 Complete Basic Training at CECOS

28 News Worth Reviewing

Speaking from Topside

CAPT Karin Lynn

With 1998 designated as the Year of the Ocean (YOTO), it seems appropriate to mention the Ocean Facilities Program (OFP). The OFP is a group of organizations, people and equipment whose mission is to support the warfighting commander-in-chief and the Navy's shore infrastructure.

The Naval Facilities Engineering Service Center (NFESC) and the Underwater Construction Teams (UCTs) are the primary organizations involved in directly fulfilling the mission of the OFP. However, both operations and mission accomplishment depend heavily on cooperation and support from across the Department of Defense (DOD). NAVFAC's support also includes the engineering field divisions, naval mobile construction battalions and amphibious construction battalions (PHIBCBs).

There are more than 60 Civil Engineer Corps (CEC) 1103P officers available to fill the 31 program jobs throughout the Navy and about 130 enlisted underwater construction technicians stationed at the UCTs and selected shore support jobs. Additionally, there are more than 100 civilian ocean engineers and specialists predominantly stationed at NFESC.

Equipment and systems used in the OFP include specialized diving gear and unique ocean engineering support equipment. It also includes the standard hammers, nails, bulldozers and pickup trucks that are part and parcel of Seabee business worldwide. We even have our own ship, the Motor Vessel *Independence*. Projects range from complicated weapon system installations at remote sites, to more traditional inspection, maintenance and construction of pipelines, moorings, undersea cable systems, offshore structures, pier and waterfront structures, and hyperbaric facilities.

OFP officers have generally completed two or more tours in traditional CEC billets, hold master's degrees in ocean engineering and have completed a rigorous 16 week Navy basic diving officer course.

OFP billets are located in facilities and public works at San Diego and at the Coastal Systems Station and the Navy Experimental Diving Unit in Panama City, Fla. These officers have duties to oversee diving operations and technical maintenance of hyperbaric system complexes, in addition to providing their respective commands with facilities maintenance, repair and construction expertise.

OFP officers also serve in critical acquisition billets where they are responsible for the Navy's world-wide network of undersea surveillance systems and underwater ranges. Additionally, there are several key Seabee billets at the UCTs, PHIBCB Two and Third Naval Construction Brigade. Still other staff positions fill a critical niche supporting national defense objectives with DOD-level sponsors in system command and program offices.

As with the rest of the Navy, the OFP benefits from the specialized technical expertise and the experience base of the civilian workforce. Since the early 1960s, civilian ocean engineers have been working in the NAVFAC community. They work on a variety of projects. These projects range from inspecting and repairing piers and offshore structures, through designing and constructing heavy weather survival moorings and underwater ranges and sensor systems, to developing new facility types such as the Mobile Offshore Base Concept. Navy engineers with advanced degrees and hands-on experience in ocean construction are working with universities and commercial firms to bring the best available technology to bear on Navy projects.

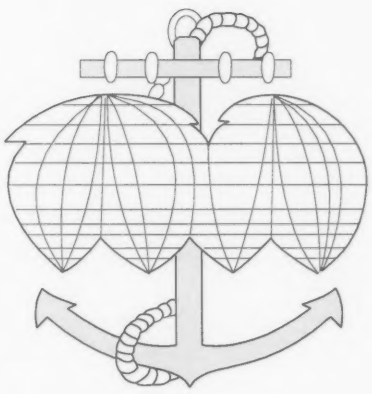
The OFP supplies the Navy—and other DOD customers as well—with specialized ocean engineering expertise that is not available in one place anywhere else in the Navy. The members of this small but well-networked community combine strong technical backgrounds and experience with project management and contracting skills. They fill their niche in the larger CEC and Navy to enable us all to achieve our missions and responsibilities to the fleet and the commander-in-chief.

For further information, see the OFP webpage at *http://nofp.nfesc.navy.mil*, which links to other YOTO sites.

Karin Lynn
Captain, CEC, USN
Director, Navy Ocean Facilities Program

The International Year of the Ocean

By Macara Lousberg



The United Nations designated 1998 as the International Year of the Ocean (YOTO) in recognition of the importance of the ocean, the marine environment and its resources for life on earth and for sustainable development. This designation, and the accompanying activities taking place worldwide, provides many exciting and important opportunities to highlight both the ecological and economic importance of oceans and to celebrate a resource that connects us all to one another.

The United States has taken an active role in supporting YOTO activities. In February 1998, federal government agencies released issue papers exploring topics such as marine environmental quality; science, technology and research; ocean resources; and managing marine areas, uses and resources. The Heinz Center held three workshops in February and March where representatives from academic, industrial, governmental and environmental organizations were asked "what is working" and "what is not" in the areas of marine research and education, sustainable coasts, fisheries and marine living resources management. Two meetings were held in May and June to get public input to the debate the health of our oceans, public health with respect to ocean activities, and the actions needed to protect ocean waters. Information from all of these events was used to set the stage for the National Ocean Conference, held June 11-12 in Monterey, Calif.

The National Ocean Conference was convened to demonstrate the interlinked nature of ocean issues, bring together various interest groups to work on common ocean interests, develop a campaign for greater public awareness and environmental support for coastal ocean issues, initiate the development of a shared vision of America's ocean agenda for the 21st Century, and contribute an official U.S. message to the world community as it celebrates YOTO.

The importance of these issues to all Americans was underscored by the attendance at the conference of President Bill Clinton, Vice President Al Gore and First Lady Hillary Clinton. Both the president and the vice president spoke of the many benefits we derive from healthy oceans and how critical it is that we sustain the health of ocean and coastal resources. Matching actions to words, they announced several new initiatives to help protect and enhance ocean resources and uses, including efforts to further protect the oceans from offshore oil drilling, build sustainable fisheries, protect coral reefs, increase ocean exploration, protect beach and coastal water quality, and monitor climate and global warming. Three additional initiatives announced by the president include an initiative to increase public access to military data and technology related to the oceans, a call for the U.S. Senate to ratify the Law of the Sea Convention, and promotion of dredging and navigational advances in U.S. ports.

Much of the ocean data gathered by the United States in support of its military missions has important scientific and commercial applications, and its availability will provide many non-military benefits. For example, the Navy has agreed to create a mechanism to declassify acoustical data which can be used to track whale migrations, predict natural catastrophes and support climate change research. The Navy is also releasing data on ocean temperature and salinity levels under the Arctic ice cap, which will provide a valuable tool in researching long-term climate change. In addition, the Navy will work with the National Oceanic and Atmospheric Administration to determine whether techniques it uses to produce highly accurate weather forecasts can be used to improve prediction of severe weather over the United States.

The Law of the Sea Convention provides the international legal framework which supports activities at sea, including military operations, fishing, international trade and environmental protection. The convention balances strategic, economic and environmental concerns. Joining the convention will have several important benefits for the United States. It will preserve freedom of navigation and overflight rights, support U.S. drug interdiction activities, secure open and efficient trade routes, and enhance fisheries management, protection of marine mammals, and efforts to control land-based sources of pollution. Ratification of the convention is supported by all sectors of the U.S. ocean community, including federal, state and local government; science; industry; academia; environmental and other public interests.

The ports' initiative is designed to maintain the competitiveness of U.S. ports and ensure this country's ability to safely handle the increase in ocean vessel traffic expected in the 21st Century. It will enhance mapping and navigation to safeguard both ship crews and the environment by reducing the possibility of collisions. It will increase dredging to deepen ports for larger ships to allow U.S. ports to remain competitive, and it will support continued enhancement of environmentally friendly technologies.

Finally, the president asked his cabinet members to produce a report, by June 12, 1999, offering recommendations for a coordinated, disciplined, long-term federal oceans policy. These recommendations are to balance economic, environmental and public health issues to preserve the oceans and their natural resources for generations to come.

Macara Lousberg works for the U. S. Environmental Protection Agency, Washington, D.C., as a special assistant to the director of the oceans and coastal protection division.

NAVFAC's Maritime Vessel *Independence*

By Dave Wicklund

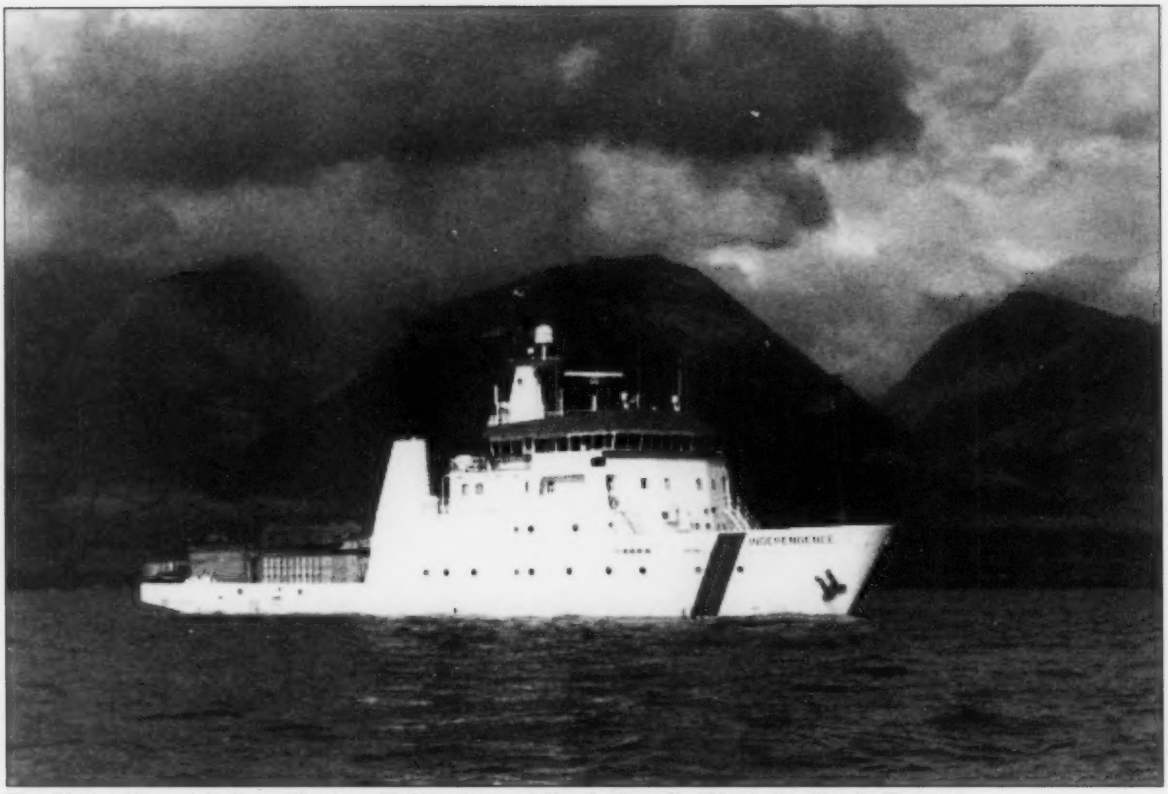
What ties the Naval Facilities Engineering Command (NAVFAC) to the training of submariners, surface combatants and naval aviators? What ingredient makes NAVFAC a key team member in testing next generation undersea surveillance systems? Day in and day out, undersea electrooptical and electromechanical cables transmit the power and the billions of bits of data per second that are the life blood of the Navy's training facilities and strategic undersea systems. The Motor Vessel *Independence*, or "*Indy*" as she is known to her crew, supports tasking not only from the Naval Facilities Engineering Service Center (NFESC) in Port Hueneme, Calif., but also from Naval Air Systems Command (NAVAIR), Space and Naval Warfare Systems Command (SPAWAR), Space and Naval Warfare Systems Center (SPAWARSYSCEN), Navy Underwater Warfare Center (NUWC) and Naval Sea Systems Command (NAVSEA) in installing, testing and maintaining these cable systems.

The *Indy* is called upon when the task requires her unique capabilities. In September 1997, despite near shore waves and currents at the Barking Sands Underwater Range in Hawaii, her shallow draft of 11.5 feet allowed her to work close to the beach to repair four storm-damaged cables. Because of her dynamic positioning capability, she maintained station within a few feet. Those capabilities, combined with her integrated navigation (surface and subsurface) system, enabled *Indy's* crew to make repairs without anchoring. In September 1998, the *Indy* returned to Barking Sands to install the first of a series of three shallow water training ranges NAVAIR and NUWC developed to improve the capability of submarines, ships and aircraft in conducting shallow water anti-submarine and mine warfare.

The 200-foot *Indy* was originally designed for the Air Force to recover space shuttle solid rocket boosters for reuse on the West Coast when the space shuttle was to be launched at Vandenburg Air Force Base. *Indy* was delivered to the Air Force on May 17, 1985, and sailed to Kennedy Space Center in Cape Canaveral, Fla. There, the vessel successfully retrieved the solid rocket boosters from Space Shuttle missions 51-I and 51-J. Because of *Indy*'s ability to simultaneously support remotely operated vehicle (ROV) operations, side scan sonar surveys, diving operations and hardware recovery, she assisted NAVSEA Supervisor of Salvage with the recovery of the space shuttle *Challenger*. When the space program decided not to launch shuttles from the West Coast, *Indy* was without a mission. She was transferred to the Navy in 1988, and under the authority of NFESC, is operated under contract by MAR, Inc. in a government-owned, contractor-operated arrangement.

Since coming to the Navy, *Indy* and her crew have compiled an impressive resume. In addition to range installations and repairs offshore Southern California, San Francisco, Puget Sound, and Hawaii, she has been used for a number of unusual projects that require her unique capabilities. In August 1998, she again performed a recovery for the Air Force and the Navy Supervisor of Salvage. Using her excellent station keeping ability, she served as the primary recovery and support vessel for Supervisor of Salvage's ROV. Despite extremely high seas, *Indy* was able to position precisely over several pieces of aircraft wreckage in more than 1,000 feet of water. Her systems tracked and simultaneously displayed the positions of the ROV, ship, and downed wreckage, and assisted in recovering several key components critical to the accident investigation.

In a more unusual operation, the University of Hawaii requested the *Indy*'s services in October 1997. The objective was to install the Hawaii Undersea Geo-Observatory (HUGO) near the summit of the Loihi submarine volcano and to run an undersea cable precisely along a 47 km route designed to minimize cable damage from the active volcano. After precisely placing the HUGO junction box at the



The Motor Vessel Independence off the coast of Maui, Hawaii. (Photo by Harris Berger)

required location just east of the volcano, *Indy* and her crew carefully installed the cable along a seafloor route selected to minimize lava fragment and lava flow hazards near the volcano. Once again, the result was a success!

Indy is an integral part of testing and supporting the next generation of integrated undersea surveillance systems for SPAWWAR and SPAWARSYSCEN. Once again, the expertise of *Indy's* crew and ocean engineering support team was brought to bear on installing and repairing fixed and movable underwater cable facilities. Engineers used the *Indy* to develop and test the tactical termination for the advanced deployable system and fixed distributed system. The tactical termination allows the surveillance array to be monitored by a vessel rather than, or in addition to, monitoring by a shore station. While on the Summer Ionian Research Experiment project in the Mediterranean Sea, *Indy's* dynamic positioning system held her on station for almost two months as engineers validated the reliability and practicality of the tactical termination.

In a project sponsored by the Chief of Naval Operations in August 1998, *Indy* once again was used for her dynamic positioning and integrated navigation capability to precisely install a vertical cable array in 12,000 feet of water offshore Southern California. Data from the tethered vertical array will support future capability in undersea surveillance.

The *Indy* is uniquely suited for her ocean-going seafloor survey, facilities installation and facilities repair missions. She has an experienced and cohesive crew, an impressive suite of support equipment including ROV's, winches, side scan sonars, precision fathometers, seafloor sampling devices and an engineering support team. The support team assists in the execution of all project phases from pre-cruise preparations through final operations and documentation. *Indy* and her crew accept a wide variety of Navy assignments with priorities and classifications at all levels; she is available for use worldwide. As a Navy working capital fund asset, *Indy* is self-supporting. Integrating NAVFAC capabilities with those of other Navy commands, *Indy* executes Navy programs that are at the forefront of ocean facilities engineering and our national defense.

Dave Wicklund works as an interdisciplinary engineer for the Naval Facilities Engineering Service Center, Port Hueneme, Calif.

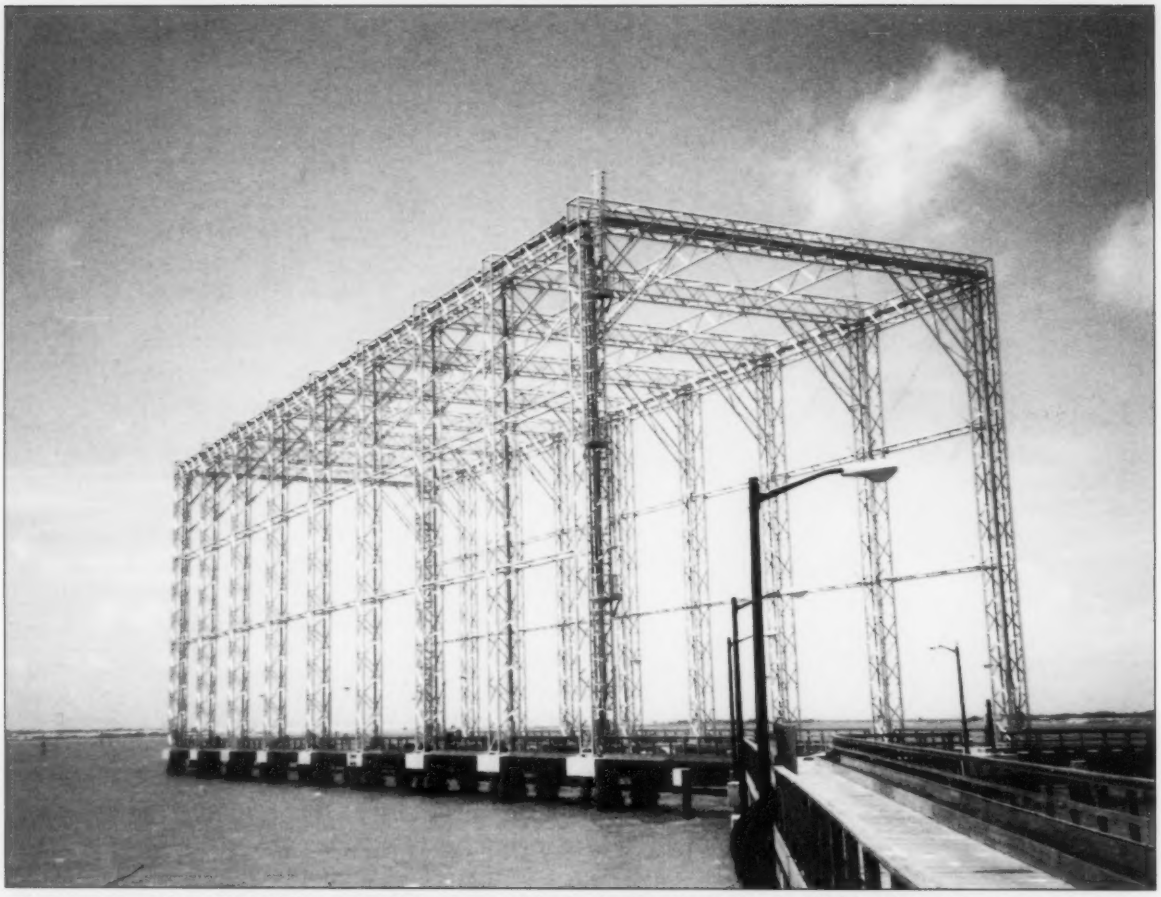
Supporting the fleet with magnetic silencing facilities

By Lonnie Winkleman and Martin Gaffey

As the mission of the U.S. Navy has transitioned from "blue water" to "brown water" responsibilities since the end of the Cold War, the importance of mine countermeasures has become more apparent. Regional conflicts of the past decade have shown that small nations now have the capability of inflicting serious damage to commercial shipping and Navy combatants through the use of a variety of influence and contact mines. These weapons are inexpensive to obtain and, once deployed, present extreme hazards to vessels and their crews. The function of a contact mine is to get in the way of an oncoming vessel and detonate once contact is made with the vessel's hull. The influence mine is considerably more sophisticated in the way it operates. Several types of influence mines are designed to detect the magnetic properties inherent in most steel-hulled ships and then detonate whenever the parameters they have been programmed for have been met.

Type 4 magnetometer removed from array at Kings Bay, Ga., deperming facility. (Photos by Lonnie Winkleman)

The Navy maintains a number of magnetic silencing facilities (MSFs) throughout the United States and overseas. The role of these facilities is somewhat complicated and not often understood, and yet they provide a vital service to the officers and Sailors at sea. MSFs are responsible for measuring the level of these magnetic properties, or signatures, and treating the vessel to reduce the signatures to acceptable limits. The treatment method is called "deperming a vessel" and is accomplished at a deperming facility. All steel-hulled surface vessels have a magnetic signature consisting of two components: permanent



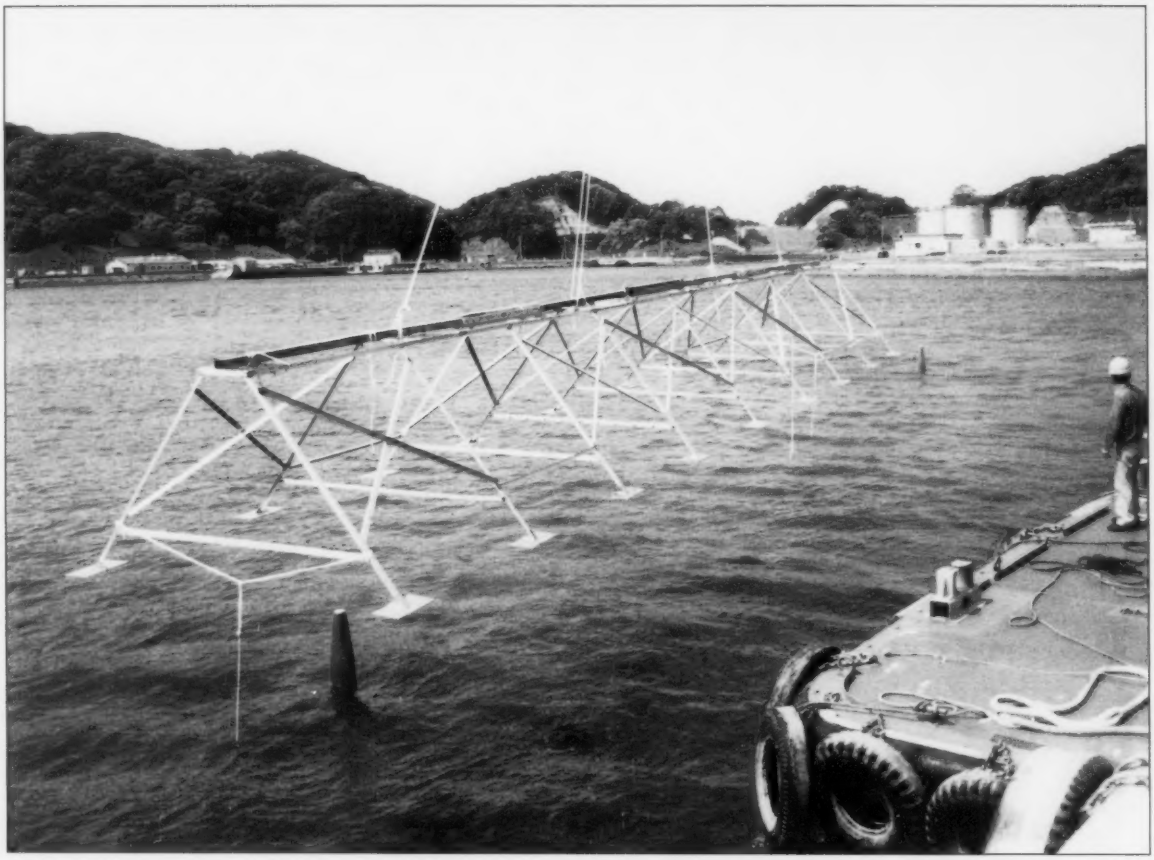
Electromagnetic roll facility, Ingleside, Texas. (Photo by Martin Gaffey) Right: FACDAR sensors are readied for deployment at the facility in Fox Island, Wash.

magnetism, resulting from the fact the vessel is made of steel; and induced magnetism, resulting from the ship's motion in the earth's magnetic field. After commissioning or following a major overhaul, a ship's magnetic signature can be reduced to acceptable levels by physically wrapping the ship with heavy gauge cables and applying approximately 3,000 amps of DC electricity in short duration "shots."

The first step in correcting a vessel's "signature" is to measure what currently exists. This is where the "check range," or degaussing range as it is sometimes called, comes into play. Most check ranges are located on the seabed in an entrance channel to a naval base. Typically, they will consist of a linear array of bottom embedded non-magnetic tubes that contain magnetometers. The instrument depth, spacing and number are dictated by the class of vessel they are designed to accommodate. As a vessel enters and leaves a harbor it will pass over this range. The range is energized when the bow crosses, de-energized when the stern crosses. The acquired data are evaluated and the vessel is notified of its signature status on a pass/fail basis. A fail status will require additional runs over the range to verify previous results, adjustments to the onboard degaussing system, or for the worst cases, an unplanned visit to a deperming facility.

Since the late 1970s, the Naval Facilities Engineering Command (NAVFAC) has provided support to the fleet in the construction, maintenance and repair of MSFs around the world. This support has ranged from the replacement of a small number of individual underwater instruments to the design and installation of complete systems.

All Navy combatants require deperming once they are commissioned. The USS John C. Stennis (CVN-74) was scheduled for transfer to the U.S. Pacific Fleet in 1998, but required deperming before this could occur. Sediment accumulation had raised the bottom depth in the carrier treatment slip to the point where it was no longer possible to berth the Stennis. The dredging issue was straightforward, but someone had to remove the array of 52 magnetometers and associated



Sensor support frame is lowered into position during FACDAR deployment in Sasebo, Japan.

cables that were on the bottom of the slip beneath 8 to 12 feet of sediment. The Naval Facilities Engineering Service Center (NFESC) was given the job of locating and removing the instrument array and then replacing it after dredging was completed. Underwater Construction Teams (UCTs) One and Two were brought onboard to perform the underwater work. NFESC provided on site support for locating and removing the instruments. Once dredging was finished, the instrument array was installed, completing the project two weeks ahead of schedule and under budget.

Surface combatants are not the only naval vessels that have to be concerned with mines and magnetic surveillance devices. The submarine owes much of its survival to the ability to remain undetectable. Since submarines are not equipped with onboard degaussing systems, they require deperming more often than a surface vessel. The magnetic treatment facility at Naval Submarine Base, Kings Bay, Ga., was designed specifically for that purpose. In the summer of 1997, NFESC was tasked by the Naval Sea Systems Command with replacing the existing array of magnetometers in both the treatment facility and the check range. NFESC engineers designed an innovative protective conduit and riser system for the instrument cables and a mechanical alignment device for aligning a new generation of triaxial magnetometers. Once again, UCTs One and Two were tasked with the underwater work. The result was a reliable system that was

installed on schedule and at a fraction of the cost of its predecessor.

EMR facility

The minesweeper is a central figure in the Navy's mine countermeasure program. When the decision was made to homeport the Navy's fleet of mine countermeasure and mine hunter vessels at Naval Station, Ingleside, Texas, the construction of an electromagnetic roll (EMR) facility was deemed essential for magnetic calibration of these ships. The EMR facility planned for Ingleside would be a state-of-the-art facility that would allow all magnetic measurements and calibrations of minesweepers to be conducted at a single location. As the project entered into the construction design phase, a problem that had to be addressed early was how to install the cables that made up the lower portion of the underwater solenoids. These cables were required to be installed in a half-circle configuration 45 feet below mean low water at its lowest point and deviating from the horizontal by no more than one foot. Since the depth of the cables below the existing bottom prohibited more conventional methods of installation, such as trenching or water jetting, a new means of placing the cables at the correct depth and curve had to be found. The solution was the use of directional drilling, a method that had not been previously used for this purpose.

Engineering innovation was only beginning. The installation of an array of 178 triaxial magnetometers and associated cables had to be designed. Twenty-six pier-mounted junction boxes transitioning the magnetometer cables to the interconnection cables required custom designing. Huge motor generator units and load banks needed to be moved to the Ingleside location. Miles of interconnection cable had to be designed and procured, and of course, all of this had to be installed. The easy solution, and the most expensive, would have been to outsource the entire job to a contractor. NFESC engineers chose instead to make judicious use of both Navy assets and contractors. The task of installing the underwater instruments and laying of the interconnection cables was assigned to UCT One. Small business contractors were hired to make the thousands of cable terminations inside the junction boxes. NFESC engineer divers conducted the quality assurance inspections on the underwater work. The project was completed 10 percent under budget and on schedule.

After commissioning or following a major overhaul, a ship's magnetic signature can be reduced to acceptable levels by physically wrapping the ship with heavy gauge cables and applying approximately 3,000 amps of DC electricity in short duration "shots."

FACDAR installations

In recent years, NFESC has become involved in a new generation of portable underwater ranges. Known as a forward area combined degaussing and acoustic range (FACDAR), these ranges provide magnetic and acoustic ranging capabilities in remote regions not equipped with permanent facilities. Intended primarily for minesweepers, the FACDAR can also be deployed to accommodate larger, steel-hulled surface combatants. Experience has shown that it was not always possible to deploy the underwater instruments of a FACDAR unit as initially envisioned by its designers. Finding locations with 30 feet of water depth necessary for ranging minesweepers and meeting numerous other parameters has proven difficult at times. The FACDAR installations in Sasebo, Japan, and Fort Lauderdale, Fla., required innovative measures to elevate the system's magnetometers and hydrophones to a proper elevation.

NFESC engineers have overcome the many challenges associated with these deployments, from coordinating the marine surveys of potential offshore sites to working with the UCTs in the final installation phases. To date, FACDAR systems have been installed in Fox Island, Wash.; Sasebo, Japan; and Fort Lauderdale, Fla. Additional systems are scheduled for installation in Bahrain and Panama City, Fla., in 1999.

With ongoing downsizing and shrinking budgets, Navy commands are continually asked to do more with less. NAVFAC is no exception. They maintain customer's needs as their highest priority. With that in mind, creative approaches to designs, procurements and use of installation assets are continually investigated and applied where appropriate. All this is done in an effort to give customers the best quality product, on schedule and for the least possible cost to the taxpayer.

Lonnie Winkleman is the product leader of the Magnetic Silencing Group at the Naval Facilities Engineering Service Center, East Coast Detachment, Washington, D.C. Martin Gaffey works in the Magnetic Silencing Group.

Causeway ferry coming alongside elevated causeway pier.

The joy of maneuvering in sea state three

By Peter Tabor

San Diego, Calif., test configuration.

BM2 Cedric Bailey of PHIBCB Two controls the causeway ferry.

Department of Defense logistic support planners rely heavily on causeway ferries to move cargo from ship to shore to sustain major contingency operations such as amphibious assault and Joint Logistics Over The Shore (JLOTS) evolutions. The most significant factor affecting productivity in JLOTS operations is the state of the sea, commonly shortened to sea state. Recent exercises show that cargo transfer effectively ceases in sea state three, with damage to causeway system components not uncommon at these high sea conditions.

The Naval Facilities Engineering Service Center (NFESC), in Port Hueneme, Calif., is developing an intuitive causeway ferry control system that will help satisfy fleet requirements for a sea state three JLOTS capability. This control system must address several problems. Existing causeway ferries have the propulsion system in the aft section only, which makes the craft difficult to maneuver. Typically, another powered section is used for bow control in higher sea conditions and during critical operations. Incorporating a bow thruster into the causeway ferry would be ideal, but doing so would further complicate a control system that is already difficult to learn and to maintain proficiency on. Because Amphibious Construction Battalions (PHIBCBs) One and Two rely heavily on selected reserves, a control system that is intuitive to use from the beginning and that requires fewer training hours is essential.

The Naval Facilities Engineering Service Center (NFESC), in Port Hueneme, Calif., is developing an intuitive causeway ferry control system that will help satisfy fleet requirements for a sea state three JLOTS capability.

The intuitive causeway ferry control system integrates the control of two or more fully azimuthing (capable of continuous rotation) waterjets and optimizes their individual propulsion to provide the desired causeway ferry response. The operator provides the desired input through a three-axis joystick. The joystick is a component of a vessel control system that couples onboard sensors with state-of-the-art computer programming to control the translation and rotation of the craft simultaneously. The system translates simple movements of the joystick into complicated thruster rotations and throttle accelerations that efficiently maintain or change the desired position and heading of a causeway ferry. If the operator wants the causeway ferry to move sideways, then the operator moves the joystick sideways. If, while moving sideways the causeway ferry needs to be rotated, then the

LT Patrick Christian of PHIBCB Two commands full speed ahead using the intuitive joystick control.

operator rotates the joystick in the appropriate direction. The further the operator moves or rotates the joystick, the greater the propulsion force in that direction.

The intuitive joystick control system was tested in San Diego Bay, Calif., in September 1997 with the assistance of the PHIBCBs; the Expeditionary Warfare Training Group Pacific, Coronado, Calif.; and the Carderock Division of the Naval Surface Warfare Center in Bethesda, Md. The test platform consisted of a causeway ferry with two non-powered causeway sections and two side-loadable warping tugs, one at each end with sterns facing outboard to simulate a bow thruster. The bow and stern powered sections were modified for control by a commercially available joystick system. The test demonstrated how commercial technology could dramatically improve maneuverability while simplifying craft operations and enhancing safety. Secondary benefits included better fuel economy, increased system reliability, improved mooring potential and reduced training expenses.

At sea testing was completed in June 1998 at PHIBCB Two, Little Creek, Va., with the assistance of PHIBCB's One and Two. The test platform consisted of a causeway ferry with a side-loadable warping tug, two non-powered causeway sections and a powered causeway section at the bow. The test demonstrated the capability of the control system to control multiple configurations from 90 to 360 feet in length and from two to four waterjets. The ability of the system to dynamically position the causeway ferry was also demonstrated. By using dynamic positioning, the causeway ferry can receive or discharge cargo without tying up to the ship or pier. This advantage is expected to increase throughput and safety.

The demonstrations dramatically showed how existing commercial technology can contribute substantially to meeting the JLOTS requirement for operating lighterage in sea state three. Not only did the intuitive joystick system significantly simplify operating procedures and enhance safety, but by maintaining efficient control of engine functions, better fuel economy, and substantially less wear and tear on the propulsion system was realized as well. Additional secondary payoffs included better mooring potential and reduced training time.

Peter Tabor is a mechanical engineer in the Amphibious and Expeditionary Department at Naval Facilities Engineering Service Center, Port Hueneme, Calif.

Ford Island Bridge becomes a reality

By LT Peter O'Hara, CEC, USN
Don Rochon
Grace Hew Len

The dream of constructing a bridge to Ford Island became a reality on April 15, 1998, when the Admiral Bernard "Chick" Clarey Bridge was officially dedicated. Naval Facilities Engineering Command (NAVFAC), Pacific Division (PACDIV), took the lead in designing and building the nearly mile-long bridge spanning Pearl Harbor.

Beginning in the late 1960s, various attempts were made to initiate military construction projects to build a bridge to Ford Island to replace the aging and expensive ferry system. The benefits of lower cost and improved land utilization seemed obvious. It was well known that roadway access to the island (that sits squarely in the middle of Pearl Harbor) would increase the Pearl Harbor Naval Complex by 50 percent, from 800 to roughly 1,200 acres. "The thought of building the bridge had been around for a long time," remarked Byrnes Yamashita, director, Facilities Planning Division, PACDIV. "A number of ideas were brought forth over the years, only to be found unworkable for one reason or another."

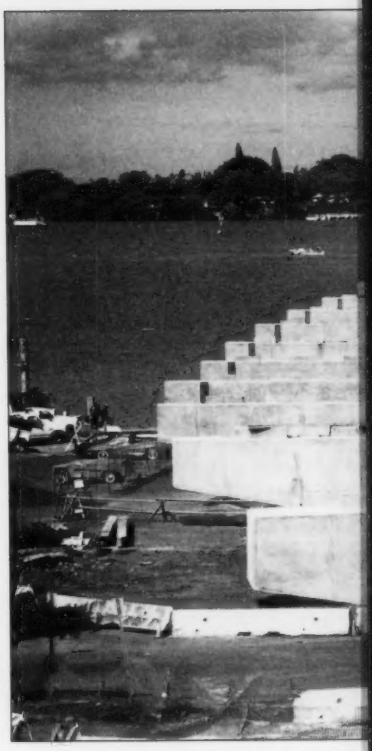
In 1967, PACDIV commissioned a study to price three alternatives for wheeled access to Ford Island—a bridge, a tunnel and a rubble-filled causeway. In the 1980s, initial plans called for the bridge to be a non-opening, fixed causeway. The eventual winner became a retractable, floating-bridge design. "Planning the design of the bridge was a major milestone," said Gary Yamagata, program manager. "But planning the funding of the bridge was just as important, and became a major accomplishment that involved a lot of people working together from the Navy, state and city."

Breakthrough deal

In support of the Commander in Chief, U.S. Pacific Fleet's longstanding desire for better accessibility to serve Ford Island, the concept to trade 122 acres of Navy land on Oahu for funds necessary to build the Ford Island Bridge and replacement warehouse facilities was developed by PACDIV in 1987.

In 1988, Hawaii Governor John Waihee expressed interest in negotiating an agreement to implement the Navy concept. In 1989, with the help and guidance of U.S. Senator Dan Inouye, special legislation (Section 127 of Public Law 101-148) was enacted to accomplish this. This statute authorized the Navy to convey the property to the State of Hawaii in return for funds to build replacement facilities and the bridge.

"The real breakthrough in the negotiations came when we agreed to take a two-step approach, agree to a price for the smaller parcel, Pearl City Junction, before reaching final agreement on the remaining Manana land," said Paul Buonaccorsi, NAVFAC's former director for contract support. In addition, because the city controlled zoning decisions in the area, Governor Waihee sought and obtained the direct involvement of the City and County of Honolulu in the negotiations.



Piers on the Halawa side stand ready for delivery of girders. (Photo by Grace Hew Len)

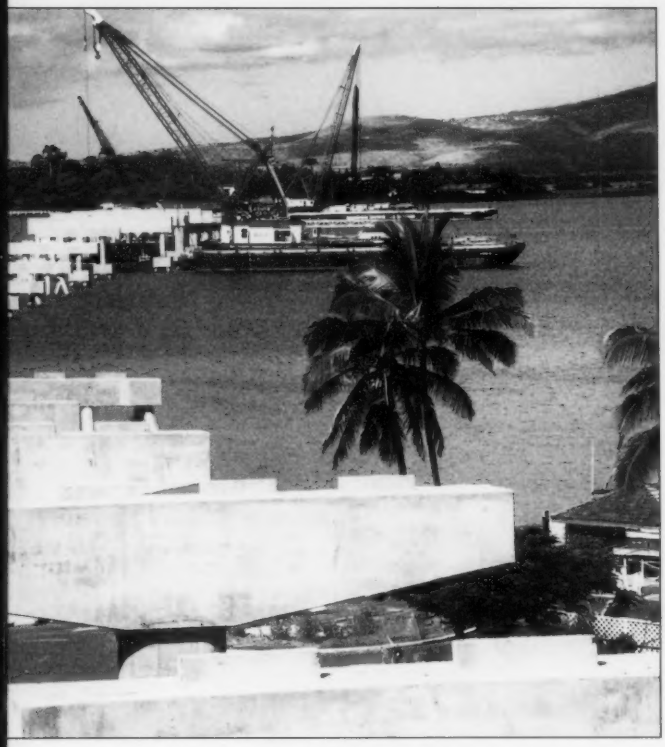
In 1991, the city and county of Honolulu and the Navy reached agreement that the city would pay $109 million for the two Navy properties. A bridge linking Ford Island to the naval base mainside would finally become a reality.

A contract to consider

The Ford Island Bridge was truly a unique, once-in-a-lifetime project. "The exciting aspect of this contract was that we actually paid the competitors for their proposals. Given the unique nature of this project and the fact that PACDIV was able to manage the money directly, allowed us certain flexibility in the contracting methods," said Jim Putnam, PACDIV contracting officer.

The three pre-qualified teams, Kiewit Pacific, Nova Group, and Dillingham-Manson, were each awarded contracts for $350,000. Each contract had options for final design, construction, and operations and maintenance after construction. Each contractor provided concept, design basis, constructability, maintainability and cost information. Putnam explained that based on a 35-percent design, the Navy conducted formal source selection looking at both technical and cost factors. Dillingham-Manson, with design partner Parsons Brinckerhoff, won the competition and had the design and subsequent construction option picked up.

"The quality of the contractor's competitive proposals was the best I've ever seen for a design-build construction project," Putnam noted. "Each team had a different concept and engineering solution. The proposed prices showed the design-cost balance with all firms providing uniquely high-quality design and construction."



Unique design

PACDIV's overall bridge design criteria required the bridge to be low profile to minimize impacts on Pearl Harbor's historical and cultural qualities and to maintain the Navy's operational requirements. Because of the tropical marine environment in Hawaii, the Navy required the use of high-technology construction material to enhance the durability of the concrete structures. These include using silica fume in all concrete, which produces higher density than standard concrete, as well as prefabricated epoxy-coated steel reinforcement on all reinforcing steel for corrosion protection.

Based on the design criteria, Parsons Brinckerhoff created a design for a 4,700 foot-long and 46 foot-wide bridge with a floating concrete drawbridge section. This bridge is believed to be one of only six concrete floating bridges in the world. Its 650-foot wide drawbridge opening is one of the world's largest for floating drawbridges. Also included in the design is a 100-foot wide, 30-foot high small boat opening within the arched section of the fixed bridge structure.

The 930-foot long floating pontoon section is drawn by two winches working in tandem that are located on the south side of the fixed bridge structure. Each end of the pontoon is connected to a winch. When the bridge is opened, one end of the pontoon is pulled while the other end is payed out in order to control the speed at which the pontoon moves. Two transition spans (ramps) connect the fixed portion of the bridge with the floating drawspan. Hinged at the fixed bridge end and resting on the floating section, the transition spans move to accommodate tidal fluctuations. During the opening cycle, the transition spans are lifted by hydraulic cylinders that are mounted on either side of the transition span at the pontoon end. Once both transition spans are fully raised, the floating section is retracted underneath the bridge. The entire operation is managed from a control house (which controls all aspects of the drawbridge operation) on the north approach at the bridge's highest point.

Construction challenges

Actual construction activities began in January 1996. Initial work included mobilization and a pile-testing program to confirm the foundation design. Two different types of testing were performed. The simplest was the driving of indicator piles to confirm the specified length of pile required. The second type performed was uplift bearing capacity tests by InSitu Tech. This testing consisted of loading 24-inch, square, precast, prestressed concrete piles to 900 kips in uplift. Digital dial gauges were used to monitor pile head movement.

Once the pile-testing program was completed, production piles were driven starting from the Halawa side of the bridge (main side of the naval base) working out towards Ford Island. Dillingham-Manson determined that the most efficient manner to execute the work would be to build the bridge from Halawa to Ford Island in order to minimize the amount of travel required to Ford Island by ferry. Production piles for pier caps in the water were 24-inch, octagonal, pre-stressed concrete piles (with an allowable axial pile capacity of 200 tons compression and 100 tons tension).

While the bridge substructure was being constructed in Hawaii, Concrete Technology Corporation (CTC) was kicking off construction of the three floating bridge sections and the precast, prestressed girders in Tacoma, Wash. The floating sections, with nominal dimensions of 310-feet long, 50-feet wide and 18-feet deep, were manufactured in CTC's graving dock area. They are a combination of precast walls and ceilings and cast-in-place floors and roof. The entire structure is post-tensioned longitudinally. Each pontoon section contains 21 watertight cells, each equipped with a leak detector and a standpipe for dewatering. Once a floating section was completed, it was floated and towed to Seattle, Wash., where it was floated onto a barge before being towed to Hawaii.

The first critical construction milestone was the delivery and installation of girders on the Halawa side of the

bridge in October 1996. Due to restrictions by the insurance carrier, as well as the need to start work on the bridge deck and super structure in order to progress toward Ford Island, this milestone was critical as the girders had to be shipped from Tacoma before harsh winter weather set into the North Pacific. In order to successfully meet the schedule date, all the pile caps on the Halawa side had to be completed. This was no small task considering that 292 piles had to be driven and 19 pier caps had to be constructed before the girders could be set.

With girders in place on the Halawa side, the first order of business was to stabilize them with diaphragms (a structural segment that acts as a stiffener). In addition to connecting the spans of the girders together so they could act as a single unit, they prevented the girders from twisting. The diaphragms were constructed of cast-in-place concrete on the pile cap. Once the girders were stabilized, precast, prestressed planks were set between the girders. These planks became the bottom forms, as well as an integral part of the composite bridge deck section. Overhang brackets were installed on the outside of the outer most girders to provide a form for the cantilevered section of the bridge deck as well as a catwalk for construction workers.

Manson Construction's derrick barges *Vasa* and *Scandia* perform a tandem lift to prepare the 250-foot transition span for mounting. (Photo by Richard Shimabukuro)

Once the planks had been set, Associated Steel began placing the epoxy-coated, reinforcing steel for the cast-in-place, concrete bridge deck section. This task required a tremendous amount of support from the field engineers as the reinforcing steel was bent and then coated on the mainland.

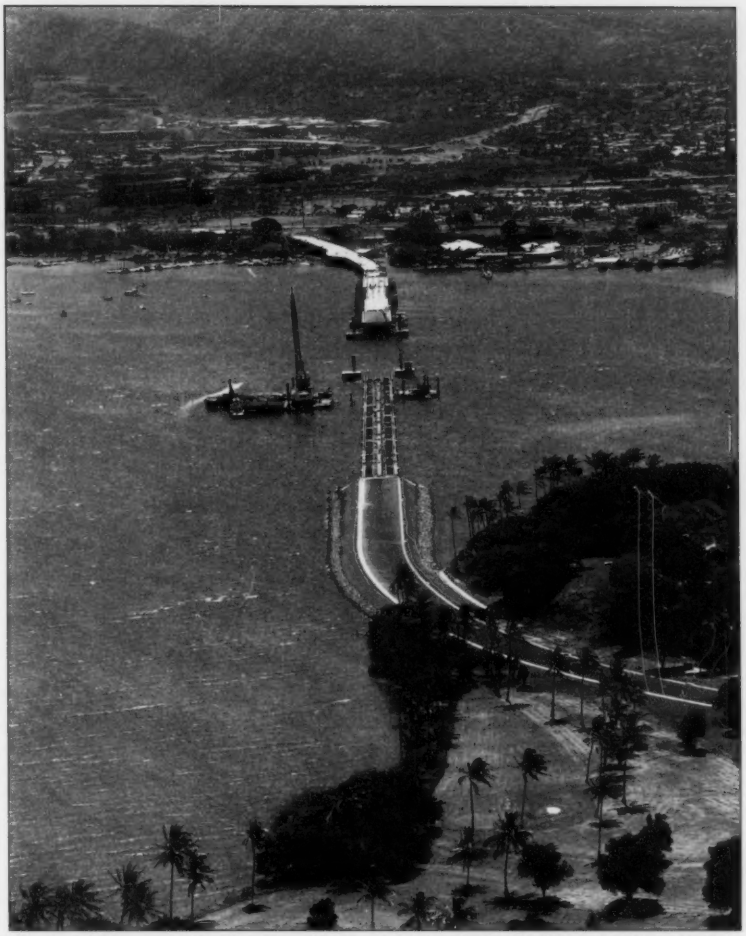
When the reinforcing steel mat had been installed for three spans (375 feet), the contractor scheduled a concrete placement for the deck. Deck placements required a crew of two-dozen men and several pieces of equipment in a paving train. Work typically began at the far end of the span to be paved. Concrete was pumped from the other end to a rotating pipe mounted on a carriage riding on a set of rails. Behind this was a power screed that struck the concrete, incorporating the crown and any superevelation required. As the concrete set, it was manually floated with a bull float from a work bridge following the screed. When the concrete had set further, grooves were raked transversely onto the surface of the road. A latex curing compound was then applied to the concrete. Finally, the concrete was kept moist with cloth and soaker hoses for several days to ensure proper curing.

The second critical evolution during the bridge's construction was mounting the transition span to the fixed section of the bridge. The challenge was to devise a way to safely attach one end of the 1200-ton transition span to the pier cap at an elevation of approximately 26 feet above mean sea level. In particular, it had to be accomplished by minimizing the necessity of having workers under the transition span before it had been secured. After the first delivery of girders, the center section of the floating bridge and the 250-foot transition span for the Halawa side was delivered. Once the pier caps, girder and road deck for the two spans adjacent to the transition span had been completed, the transition span was mounted on the fixed bridge. The transition span was shipped on top of the pontoon section. Over the course of several months, the Dillingham-Manson team devised and refined a plan to safely attach the end of the transition span to the fixed bridge. This was done using Manson's two derrick barges, *Scandia* and *Vasa*, both of which are rated at 300 tons each. Once the transition span had been lifted, hinged steel support legs were swung downward and bolted in place to support the end of the transition span. Then the transition span was moved to its final location at low tide. As the tide began to rise, the transition span was moved to its final elevation and bolted to the pier cap. With one end attached, the other end was raised hydraulically off the pontoon and supported by falsework in the elevated position.

The third critical construction milestone, the integration of the floating section, was initiated shortly after the remaining two pontoon sections were delivered from Tacoma. The task at hand was to bolt the three sections together while they floated in Pearl Harbor so that they would become one complete floating section that was within tolerances for straightness and level. All of this had to be done, of course, without flooding the interior com-

partments.

As with the transition span installation, this evolution required extensive planning between Dillingham-Manson, Parsons Brinckerhoff and CTC. The final plan was to put the three pontoon sections under the bridge in the correct order. Two pontoon sections were then pulled together at the mating faces and blocked in place to prevent lateral movement under the bridge. During this process, "flat jacks" (flat, pancake-shaped hydraulic jacks) were placed at three "hardpoints" on the mating faces. The flat jacks were used to make final adjustments to the alignment of the two pontoons. A cofferdam was then placed around the joint between the two pontoons and dewatered. Once dewatered, the watertight seals were removed from the bolt holes and integration bolts were pulled across. Initially, eight bolts were jacked to tensions of 190 kips or 250 kips, depending on location. Specially designed mortar was then placed in the joint between the two pontoons to form a gasket that would allow a uniform distribution of force around the perimeter of the mating surfaces. Once the mortar reached a compressive strength of 3,500 psi, half of the 78 total bolts were installed and jacked to 464 kips. Once the mortar reached 5,000 psi, the rest of the bolts were installed and jacked to 464 kips. When all the bolts had been jacked, the ducts surrounding the bolts were filled with rust-inhibiting grease and the rod ends, nuts and washers were coated with a coal-tar epoxy. This operation was performed twice to integrate all three sections. After two-and-a-half weeks, the entire pontoon section had been integrated.



Work shifts over to the Ford Island side of the bridge in May 1997. (Photo by Williams Photography)

The following months saw bridge construction progressing on schedule as the concrete deck was extended further out to Ford Island. Following the deck out, a crew worked on constructing the sidewalk and barrier walls of the bridge. The bridge roadway consists of two 12-foot wide traffic lanes with two eight-foot wide shoulders and a four-foot wide sidewalk. The two lanes can be reconfigured in the future to three lanes if development calls for it.

As work advanced toward the island, a smaller, 120-foot transition span was placed in a similar fashion to that of the 250-foot transition span. Girders for the Ford Island side of the bridge arrived with the remaining two pontoons and were installed within two days.

Finally, the dream comes true

Bridge construction wrapped up in early April 1998. The project was completed within budget a month and a day ahead of schedule. The Admiral Bernard "Chick" Clarey Bridge, named in honor of Admiral Clarey, former Commander in Chief of the U.S. Pacific Fleet, is an engineering marvel and the fulfillment of a decades-old dream.

Lieutenant Peter O'Hara, P.E. was the assistant resident officer in charge of the construction of the Admiral Clarey Bridge. He is now a senior project engineer with Engineering Consulting Services, Ltd. Don Rochon is the public affairs officer for Naval Facilities Engineering Command, Pacific Division, and Grace Hew Len is a former public affairs specialist who worked for Pacific Division.

Aerial view of Nomans Land Island.

Nomans Land designated as wildlife refuge

By Heather MacDonough

Nomans Land is an island located just 2.7 miles southwest of Martha's Vineyard, Mass., but, Nomans Land is far from being an ordinary island.

During World War II, the Navy leased Nomans Land Island from owner Joshua Crane and used it as a live bombing range. In 1952, the Navy purchased the island from Crane and continued using it as a practice range, dropping only inert practice bombs until 1996. Even though the bombing stopped, the island is still used as an optical target.

In 1970, one third of the 628-acre island was designated a "no fire zone" to be used as a wildlife refuge. In the absence of human interference, this portion of the island has become a safe haven for a variety of birds.

In 1997, the explosive ordnance disposal team from the Naval Education and Training Center in Newport, R.I., performed a surface sweep of Nomans Land Island to render inert all above ground ordnance. Naval Facilities Engineering Command, Northern Division (NORTHDIV), contracted for the removal of all remaining debris. The cleanup effort was in preparation for the federal-to-federal transfer of Nomans Land Island from the Department of the Navy to the Department of the Interior.

The first step in removing debris from Nomans Land Island was to burn the waist-high vegetation from the island. Burning the vegetation allows for a more effective removal of the ordnance debris and has an additional benefit of renewing the native plants. With participation

from the U.S. Fish and Wildlife Service, the Massachusetts Department of Environmental Protection, the Environmental Protection Agency and various Navy commands, two public information sessions were held in April 1998 in the towns of Chilmark and Gay Head, both on Martha's Vineyard. Poster sessions highlighted safety, environment, the controlled burn, history and wildlife management. A successful controlled burn took place on April 28 with approximately 65 percent of the brush being burned.

Next, NORTHDIV mobilized remedial action contractor Foster Wheeler to provide ordnance training for their workers as well as safety briefings for all authorized personnel entering the island on official business. The contract called for Foster Wheeler to remove surface ordnance debris, an abandoned underground storage tank, targets that remain on the island, some equipment and building materials. Subsequently, a site investigation by a Massachusetts licensed site professional ensured compliance with environmental regulations.

The fieldwork was completed in September 1998, although the Secretary of the Navy had approved the transfer of the island on June 26. The entire island is now managed by the U.S. Fish and Wildlife Service as an unmanned wildlife refuge.

Heather MacDonough works as an environmental protection specialist for Naval Facilities Engineering Command, Northern Division.

Hurricane Bonnie: A PWC perspective

By LCDR Chris Kiwus, CEC, USN, Ph.D., P.E.

Hurricane Bonnie hit the Virginia Tidewater area with a glancing blow early Friday morning, Aug. 28, 1998. The 2,500 employees of the Navy Public Works Center (PWC), Norfolk, Va., were responsible for many facilities and installations that were in harm's way, including the Naval Station and Naval Air Station, Norfolk; the Norfolk Naval Shipyard and Naval Medical Center, Portsmouth; the Naval Amphibious Base, Little Creek; the Naval Air Station Oceana, Virginia Beach; and the Naval Weapons Station, Yorktown.

Before Bonnie made landfall, she had picked up wind speeds of 115 mph. Hurricane condition two was set on Tuesday evening, Aug. 24, and the PWC production officer activated the operations control (OPCON) center. All of Naval Station Norfolk's 43 ships were moved to safe harbor or out to sea to avoid the storm. The piers and airfields were left empty and quiet to await the storm. All day Wednesday and into Thursday, the PWC OPCON center was in preparatory mode with a disaster preparedness officer tracking the storm.

Seabees remove a fallen tree at Naval Station Norfolk, Va. (Photo by Barry Callis)

Captain John Doyle, commanding officer, and Captain Rich Cellon, executive officer, kept the PWC team focused on readiness and safety. Preparations included setting up damage assessment and repair teams, tracking and positioning generator and lifting assets, and running PWC through the OPCON center. The acquisition group lined up contractors for hurricane recovery from the PWC facilities support contracts (FSC) shop as well as special contingency contracting from Naval Facilities Engineering Command, Atlantic Division.

When Hurricane Bonnie hit Virginia Beach, the rain was strong and the winds were up to 80 mph. Hundreds of thousands of people in town lost power. On base, shops utilities forces restored power and maintenance forces and a Seabee detachment from Naval Mobile Construction Battalion Seven made general repairs, while FSC contractors repaired roofs and cleaned up the grounds. Damage to base facilities was assessed at more than $4.5 million.

There were many lessons learned from Hurricane Bonnie. Some of PWC's most valuable preparations for the hurricane included:

- Laying out the OPCON center in advance. Phone lines were already installed and phone numbers were published. Status boards were prepared to track key assets, such as generators and cranes.
- Keeping the focus on the OPCON center. The production officer must prioritize what gets done. There are many competing projects, and resources are limited.
- Keeping phone lists up-to-date to make communications simple.
- Using the internet connection in the OPCON center to keep up-to-date on the storm's location and to estimate the storm's landing time. As a backup, know the place on base where weather services are located.
- Keeping a robust list of available local contractors and staying in touch with them prevented premature reliance on larger contingency contracts.
- Keeping complete flood plain maps of the base in the OPCON center.

A complete list of hurricane lessons learned is available from the PWC Norfolk disaster preparedness office, 757-444-7050.

Lieutenant Commander Chris Kiwus is the acquisition officer at Public Works Center Norfolk, Va.

85 Complete Basic Training at CECOS

Eighty-five members of basic classes 213 and 214 graduated from the Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif. Course work is comprised of eight weeks of specialized training pertinent to the Navy's needs for shore installation engineering, public works management, construction contracting and administration, and Seabee operations.

Basic Class 213

Graduation: April 14, 1998

LTJG John R. Anderson ♦‡
BSCE / George Mason Univ.
to NAVSHIPYD, Portsmouth, Va.

ENS Oscar Bernal
BSCE / Univ. of Florida
to ROICC, Camp Lejeune, N.C.

ENS Jay A. Bieszke
BS Arch. / Ball State Univ.
to NAS Keflavik, Iceland

ENS Thomas S. Blanchard ♦
BSME / Univ. of Vermont
to NAS, Public Works, New Orleans, La.

ENS James E. Brown
BS Env. Eng. / Univ. of Central Florida
to PWC Washington, D.C

ENS James R. Cappelmann
BSME / Florida State Univ.
to SOUTHDIV, Cont. Off., Barksdale, La.

ENS Deanna S. Carpenter
BS Env. Eng. / Humboldt State Univ. to NAVSUPPACT, Naples, Italy

ENS Michael W. Chucran
BSEE / Univ. of S. Florida
to ROICC, Biloxi, Miss.

ENS Andrew M. Cook
MSCE / Univ. of Virginia
to ADMINSUPU, Bahrain

ENS Bradley D. Davis
MS Arch. / Texas A&M
to PWC Pearl Harbor, Hawaii

CWO2 Darren P. Davis ♦
to CBU 416, Fallon, Nev.

ENS Gary W. Doss
BSCE / Univ. of Alabama
to PWC Guam

LT David W. Fenton †
BSME / Univ. of Texas
to SOUTHWESTDIV, Cont. Off., Camp Pendleton, Calif.

ENS Richard A. Ficarelli
BSEE / Calif. State Univ.
to ROICC, Silverdale, Wash.

ENS Lance M. Flood
BSME / Clemson Univ.
to NMCB 7, Gulfport, Miss.

ENS Ana I. Franco
BSEE / Univ. of Miami
to MCAS, Beaufort, S.C.

ENS Jeremy L. Freeman
BSME / Utah State Univ.
to SOUTHDIV, Cont. Off., Fort Worth, Texas

LT Mark T. Geronime
BSME / Iowa State Univ.
to PACDIV, Pearl Harbor, Hawaii

ENS Steven E. Gladwell
BSCE / Brigham Young
to PWC Jacksonville, Fla.

ENS Robert D. Goad
MS Env. Eng. / N.C. A&T
to NAS, Pax River, Md.

LT Bryan J. Grappe
BSCE / Oregon State Univ.
to EFA MED, Cont. Off., Sigonella, Italy

ENS Randall E. Harmeyer
ME / Univ. of Florida
to SOUTHDIV, Cont. Off., Memphis, Tenn.

LT Bryan E. Heller
BSCE / Brigham Young
to ROICC, Virginia Beach, Va.

ENS Julie A. Hrdlicka
BSCE / Univ. of Akron
to SUBASE, New London, Conn.

ENS Ronald J. Jenkins
BSCE / Florida State Univ.
to WPNSTA, Charleston, S.C.

ENS Craig K. Kennedy
BSCE / Univ. of S. Carolina
to NAS, Sigonella, Italy

ENS Stephen S. Khovananth
BSCE / California State Univ.
to PACDIV, Pearl Harbor, Hawaii

ENS Erick B. Knezek ♦
ME Ocean Eng. / Texas A&M
to NMCB 133, Gulfport, Miss.

ENS Chad C. Koster
BSCE / Kansas State
to MCAS, Yuma, Ariz.

ENS Phillip M. Lavallee
BSCE / Syracuse Univ.
to LANTDIV, Cont. Off., Guantanamo Bay, Cuba

ENS Christopher J. Lee ♦
BSCE / Brigham Young
to NMCB 74, Gulfport, Miss.

ENS Thomas J. Lyons
BSIE / Georgia Tech.
to NAS, Key West, Fla.

ENS Michael R. Mollineaux
BSME / Ohio Univ.
to SOUTHDIV, Cont. Off., Pensacola, Fla.

LT Michael P. Oestereicher
BS Arch. / Univ. of Colorado
to EFA WEST, Cont. Off., Point Mugu, Calif.

ENS Joseph C. Pope
BS Env. Eng. / Humboldt State Univ.
to ROICC Travis AFB, Calif.

ENS Neil C. Rader
BSCE / Tennessee Tech.
to NAVSUBASE, Kings Bay, Ga.

ENS Todd M. Rutherford
BSAE / Auburn Univ.
to ROICC, Cont. Off., Portsmouth, Va.

ENS Jon S. Scott
to PWC Norfolk, Va.

ENS Brandon J. Seppala
BSCE / Michigan Tech.
to EFA CHES, Cont. Off., Patuxent River, Md.

ENS Jeffrey W. Sherwood
BSCE / Utah State Univ.
NAF Atsugi, Japan

ENS Robert E. Smith
BSCE / San Diego State
to CBC, Port Hueneme, Calif.

LT Michael R. Tasker
BSCE / Univ. of Washington
to EFA MIDWEST, Cont. Off., Great Lakes, Ill.

ENS Jennifer L. Tetatzin
BSCE / Calif. State Univ.
to PACDIV, Pearl Harbor, Hawaii

ENS Michael W. Trest
BSME / Old Dominion
to SOUTHDIV, Cont. Off., Meridian, Miss.

LT Ernest J. Triche
BSOE / USNA
to SOUTHWESTDIV, San Diego, Calif.

LT Dean A. Vanderley
BSME / Calvin College
to ROICC Bremerton, Wash.

CWO2 Joseph W. Vasquez ♦
BSCE / Republic Central
to 31st NCR, Port Hueneme, Calif.

ENS Daniel M. Walulik
BSME / Univ. of Rochester
to NMCB Three, Port Hueneme, Calif.

ENS Neil E. West
BSME / Univ. of Arkansas
to PWC Great Lakes, Ill.

ENS Douglas B. Whimpey
BSCE / Brigham Young
to SOUTHIDV, Cont. Off., Jacksonville, Fla.

CWO2 Jimmie L. Williams
to NMCB 74, Gulfport, Miss.

ENS Chi Zhang
BSCE / Stanford Univ.
to OICC FAR EAST, Yokosuka, Japan

Basic Class 214

Graduation: October 21, 1998

CWO2 (SCW) Mark E. Bierce ♦
BSBM / Columbia College
to PWC Norfolk, Va

ENS Jeffrey D. Brancheau
BSAE / Univ. of Colorado
to NMCB 133, Gulfport, Miss.

ENS Vonda L. Brandt
BSEE / Clemson Univ.
to NAVSUPPACT, Souda Bay, Greece

ENS Jason R. Brown
BSCE / Iowa State Univ.
to SOUTHDIV, Cont. Off., Fort Worth, Texas

ENS Patrick T. Connor
BSEE / Univ. of Florida
to MCB, Quantico, Va.

ENS Danny H. Cruz
BSCE / Univ. of Illinois
to OICC MED, Cont. Off., Bahrain

ENS Kelli A. Danek
BSCE / Oregon State Univ.
to PWC Guam

ENS Anthony J. Dapp
BSCE / Univ. of Wisconsin
to LANTDIV, Cont. Off., Camp Lejeune, N.C.

ENS Bobby D. Dasher
BSCE / Georgia Tech.
to PHIBCB Two, Norfolk, Va.

ENS Ryan C. Davis
BS Env. Eng. / Univ. of Fla.
to SOUTHDIV, Cont. Off., New Orleans, La.

ENS Marc A. Doran ♦
BSCE / Oregon State Univ.
to NMCB Five, Port Hueneme, Calif.

ENS Brady J. Frederick
BSCE / Michigan Tech.
to EFA WEST, Cont. Off., NAS Fallon, Nev.

ENS Joshua J. Gamez
BSME / Univ. of Washington
to SOUTHDIV, Cont. Off., Corpus Christi, Texas

ENS Peter D. Heffern
BSOE / USNA
to LANTDIV, Cont. Off., Camp Lejeune, N.C.

ENS Michael W. Hermanson
BSCE / Ohio State Univ.
to MGAGCC, Twenty-nine Palms, Calif.

ENS Lawrence D. Hilton
BSCE / Calif. State Univ.
to LANTDIV, Cont. Off., Norfolk, Va.

ENS Michael A. James ♦
BSCE / Univ. of Florida
to NMCB One, Gulfport, Miss.

ENS Garry M. Jones
BSME / Univ. of Puerto Rico
to NAS Point Mugu, Calif.

ENS Michael S. LaVielle
BSCE / Seattle Univ.
to PWC Pearl Harbor, Hawaii

ENS Steven F. O'Hara
BSCE / Univ. of Kentucky
to EFD NORTH, Cont. Off., Earle, Colts Neck, N.J.

ENS Melissa B. Plean
BS Sys. Eng. / USNA
to OICC Far East, Cont. Off., Iwakuni, Japan

ENS Benjamin A. Puig
BS Gen. Const. / Texas A&M
to NMCB 40, Port Hueneme, Calif.

ENS Domingo J. Rivera
BS Computer Eng. / Univ. of Puerto Rico
to PWC Pensacola, Fla.

LTJG Erin H. Sanders ♦†
BSME / Norwich Univ.
to SOUTHWESTDIV, San Diego, Calif.

ENS Keith C. Sandoval
BSAE / Univ. of Wyoming
to EFA WEST, Cont. Off., China Lake, Calif.

ENS Heather W. Shriner ♦ ‡
MSCE / Univ. of Virginia
to EFA CHES, Washington, D.C.

ENS Max Sisson
BSIE / Mississippi State
to NMCB 133, Gulfport, Miss.

LTJG Aaron M. Still
MSE / Univ. of Texas
to NAS Point Mugu, Calif.

ENS James C. Tompkins
BSCE / Texas Tech.
to PWC Guam

ENS Heather J. Walton ♦
to NCTC, Gulfport, Miss.

ENS Marc F. Williams
BSOE / USNA
to NMCB Three, Port Hueneme, Calif.

ENS Mark B. Williamson ♦
BSOE / USNA
to EFA MED, Cont. Off., Bahrain

ENS Jonathan P. Witham
BSCE / Univ. of Texas
to SOUTHWESTDIV, Cont. Off., Twenty-nine Palms, Calif.

♦ With Distinction
† Class Commander
‡ First in Class

Reserve officers

Basic class 213: January 12, 1998 through April 14, 1998 (Photos not available.)

Name	Degree/College	Duty Station
LT Min K. Bae	MSME / Ajou Tech. Inst.	to CNF Korea Det. Four
ENS Mark E. Blue	MSME / Univ. of Utah	to NMCB 14, Jacksonville, Fla.
ENS David O. Bola		to NMCB One, Detroit, Mich.
ENS Mark Dietrich	MSHW / Idaho State Univ.	to NMCB 18, Fort Lewis, Wash.
ENS Eric C. Foresman	BSME / Univ. of Iowa	to NMCB 15, Belton, Mo.
ENS James R. Golden		to NMCB 23, Fort Belvoir, Va.
ENS Michael J. Gollins		to NMCB 24, Huntsville, Ala.
ENS Kent R. Hendricks	MSMC / Idaho State Univ.	to NMCB 18, Fort Lewis, Wash.
CWO2 George W. Prussack	MSME / Long Island Univ.	to NMCB 21, Lakehurst, N.J.
ENS Yves M. Reme		to NMCB 25, Fort McCoy, Wis.
LTJG Jody A. Rice		to NMCB 17, Fort Carson, Colo.
ENS Jaswant S. Sihra		to NMCB 28, Shreveport, La.
ENS Douglas G. Smith	BSCE / West Virginia Univ.	to NMCB 24, Huntsville, Ala.
ENS Charles H. Sommerville	MBA / Univ. of Michigan	to CBMU 202, New Haven, Conn.
ENS Jeremy S. Stevenson		to NMCB 24, Huntsville, Ala.

Basic class 214: July 27, 1998 through August 12, 1998

ENS James C. Barnes
BSME / Univ. of Missouri
to NMCB 26, Detroit, Mich.

ENS Charles L. Decker
MS / Stanford Univ.
to NMCB 24, Huntsville, Ala.

ENS Joseph L Disharoon II
BSME / Univ. of Calif.
to NMCB 18, Fort Lewis, Wash.

LTJG Anthony R. Fogler
MSEM / Florida Tech.
to NMCB 21, Lakehurst, N.J.

ENS Marcus J. Galvan
BSCE / Univ. of Texas
to NMCB 22, Fort Worth, Texas

LT Michael R. Gustafson
MSME / Duke Univ.
to NR PHIBCB Two, Cleveland, Ohio

ENS Steven L. Hartwig
BSCE / Calif. State Univ.
to NMCB 18, Fort Lewis, Wash.

LTJG Julie A. Kern
MSME / Univ. of N. Mexico
to NMCB 22, Fort Worth, Texas

LT Robert P. Leis
BSME / Tufts University
to NMCB 21, Lakehurst, N.J.

LTJG Douglas F. Luback
MBA / St. John's Univ.
to NR CARGO HD BN Six, Brooklyn, N.Y.

ENS Paul M. Lucia
BA Arch. / Univ. of S. La.
to NMCB 28, Shreveport, La.

LTJG Abe H. Nachabe
BSCE / Ga. Inst. of Tech.
to NCFSU Two, Port Hueneme, Calif.

ENS Tuan Nguyen
BSME / Univ. of Calif.
to NCFSU Two, Port Hueneme, Calif.

LT Robert A. Oliver
MSEE / Bettis Reactor Eng. School
to NMCB 24, Huntsville, Ala.

ENS Jeffrey J. Osmond
MS Arch. / Univ. of Maryland
to NMCB 23, Fort Belvoir, Va.

LTJG Julio R. Palacio
B Arch. / Calif. Polytech
to NCFSU Two, Port Hueneme, Calif.

LTJG Anneke M. Pingtella
MSME / San Diego State
to NMCB 22, Fort Worth, Texas

LT Robert C. Ragland
MSE / Univ. of Arkansas
to NR EEU LANT, Norfolk, Va.

ENS Jose F. Santiago
MSEM / Polytechnic Univ. of Puerto Rico
to NMCB 14, Jacksonville, Fla.

ENS Eric A. Schneider
BSME / Old Dominion Univ.
to NMCB 23, Fort Belvoir, Va.

LTJG Curtis L. Smith
MBA / Arizona State Univ.
to NMCB 17, Fort Carson, Colo.

ENS Luann R. Swanberg
MS Bus. Org. Mgt. / Univ. of LaVerne
to Third NCB, Port Hueneme, Calif.

ENS Garret W. Tam Sing
MSCE / Univ. of S. Calif.
to NCFSU Two, Port Hueneme, Calif.

LTJG Alfonso O. Thompson
MSE / Univ. of Nevada
to NMCB 17, Fort Carson, Colo.

ENS Patrick B. Upshaw
BSCE / Univ. of Florida
to NMCB 14, Jacksonville, Fla.

ENS Robert A. Warder
MSCE / Univ. of New Mexico
to NMCB Five, Fort Worth, Texas

ENS Jack Z. Weeks
BSCE / Virginia Tech.
to NMCB 23, Fort Belvoir, Va.

ENS Harry Wong
MSEE / Loyola Marymount
to NCFSU Two, Port Hueneme, Calif.

ENS Joseph W. Yates
MBA / Emory Univ.
to Third NCR, Atlanta, Ga.

NEWS WORTH REVIEWING

RADM Smith new Chief

Rear Admiral Louis M. Smith, CEC, USN, assumed command of the Naval Facilities Engineering Command (NAVFAC) and became Chief of Civil Engineers on Sept. 25, 1998. Before coming to NAVFAC, RADM Smith had been Director, Facilities and Engineering Division (N44) for the Deputy Chief of Naval Operations (Logistics). He was promoted to rear admiral (upper half) on Jan. 1, 1998.

RADM Louis M. Smith

Born and raised in Milwaukee, Wis., he graduated from Pulaski High School and Marquette University, where he received his bachelor's degree in civil engineering in January 1967. Upon graduation from Marquette, he was commissioned an ensign in the U.S. Navy's Civil Engineer Corps through the Navy's ROTC program.

He was initially attached to Naval Mobile Construction Battalion 53, homeported in Davisville, Rhode Island. While there, he made three deployments to Vietnam and commanded Seabee Team 5301. He was then transferred to the staff of the officer in charge of construction, Mid Pacific, in Pearl Harbor, where he served as acquisition coordination officer and as assistant resident officer in charge of construction. In 1972, he was assigned as the assistant public works officer for Naval Air Station, Brunswick, Maine.

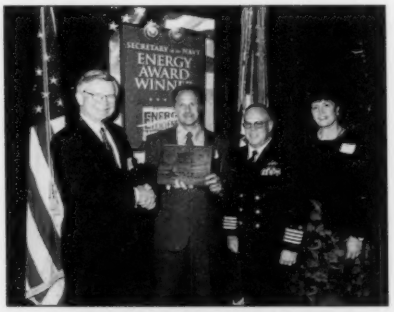
He left that job in 1974 to attend graduate school at Purdue University, where he earned his master's degree in civil engineering. He was then sent as an exchange officer to the U.S. Air Force at the headquarters of the Strategic Air Command, Offutt Air Force Base, Nebraska, where he was a branch chief in program development. Transferred to Washington, D.C., in July 1977, RADM Smith joined the Security Assistance Division (OP-63) of the staff of the Chief of Naval Operations as facilities engineer. He was transferred within the OPNAV staff to the Shore Activities Planning and Programming Division (OP-44) in August 1979. In 1981, he was assigned as the public works officer at the U.S. Naval Station in Keflavik, Iceland, until he returned in July 1983 to the Office of the Comptroller of the Navy in Washington, where he served as a budget analyst.

In 1985, RADM Smith was reassigned to the Comptroller Office at NAVFAC headquarters. He was transferred in 1987 to the Western Division of NAVFAC, where he served as the head of acquisition and then as vice commander. He assumed command of the Navy Public Works Center San Diego in August 1990. He held that position until January 1993, when he returned to NAVFAC headquarters to become the director of programs and comptroller. From September 1994 to May 1995, he served as Vice Commander, NAVFAC and Deputy Chief of Civil Engineers.

RADM Smith is a registered professional engineer in the state of Hawaii. His decorations include the Legion of Merit, Bronze Star Medal, Meritorious Service Medal, Combat Action Ribbon and several unit and campaign awards. He also holds numerous Vietnamese Awards.

SECNAV Energy Awards

The Honorable Robert B. Pirie Jr., Assistant Secretaray of the Navy (Installations and Environment), presented the FY 1997 SECNAV Energy Conservation Awards on Oct. 27, at the Navy Memorial and Naval Heritage Center in Washington, D.C. Naval Construction Battalion Center (NCBC), Port Hueneme, Calif., tied as the winner in the Large Shore Category.



(From left to right) The Honorable Robert B. Pirie Jr. presents energy award to Rich Spiessl, CAPT James McConnell, and Linda Sneed of NCBC, Port Hueneme.

The winners for FY 1997 reported a total cost avoidance of $4.5 million against their FY 1985 baselines.

NCBC was presented a $45,000 award to be used at the discretion of the commanding officer to improve quality of life and encourage further energy conservation. Additionally, the command is authorized to fly the SECNAV energy flag for one year.

NAVFACHQ Moves to WNY

A ribbon-cutting for the Navy's first green building was held on Sept.22, at the Building 33 complex in the Washington Navy Yard, Washington, D.C.

The Building 33 complex, which was renamed the Sanger Quadrangle, houses the new headquarters for the Naval Facilities Engineering Command (NAVFAC), the Office of the Judge Advocate General (OJAG) and the Naval Legal Services Command (NLSC). The arrival of the commands, which moved from leased spaces in Alexandria, Va., marks the first major move of two headquarters commands into the Washington Navy Yard as a result of the 1993 base realignment and closure recommendations. A total of about 400 people moved onto the Navy Yard from NAVFAC and 130 from OJAG/NLSC.

Rear Admiral David J. Nash, former Commander, NAVFAC, and Chief of Civil Engineers and Admiral Donald L. Pilling, Vice Chief of Naval Operations, unveil the Sanger plaque.

A plaque honoring William P. S. Sanger, who on July 8, 1836, was appointed "Civil Engineer for the Navy" on the staff of the Board of Commissioners, was also unveiled.

Engineering Field Activity Chesapeake managed the renovation of the 140-year-old complex.

Navy Assessment Center

The Navy Assessment Center, located in Port Hueneme, Calif., is a centralized Naval Facilities Engineering Command (NAVFAC) service that helps ashore commands locate their Year 2000 (Y2K) weaknesses. Some of the services provided by the center include:

- Inventory assessment using the Navy Compliance Data Base.
- Research of Y2K impact on those items that are not in the data base.
- Rick assessment of noncompliant Y2K items.
- Guidance on repairs, cost timeline and contingency planning.

To get the Navy Assessment Center working for you, begin at the Center's web site at *http://www.nfesc.navy.mil/y2k/*.

Compile your inventory data on the Inventory Data Collection Forms found on the web site. Completed forms should be forwarded either by e-mail to *nfescy2k@nfesc.navy.mil* or via conventional mail to:

Y2K Help Desk
Naval Facilities ESC
Code 21
1100 23rd Avenue
Port Hueneme, CA 93043

For further information, call the Y2K Help Desk at DSN 551-1368, commercial 805-982-1368, or e-mail *nfescy2k@nfesc.navy.mil*.

Portsmouth Acute Care Facility Complete

Naval Medical Center Portsmouth took beneficial occupancy of the acute care facility (ACF) on 31 October, which means the ACF is considered "substantially complete." Completion of the ACF, now called the Charette Health Care Center (CHCC), was a major milestone in the $350 million redevelopment of the medical center, begun in 1990.

Construction on the one million square foot ACF began in March 1994. The medical construction liaison office is working around the clock to outfit the CHCC with $100 million worth of medical equipment, computer networks, and furniture before the facility is ready to see patients. The final phase of the 10-year redevelopment effort, renovations to Building 215, the current hospital, and Building 1, the original 1830 hospital, will begin as soon as operations shift to the CHCC.

The first contract for the project was awarded in April 1990 by Naval Facilities Engineering Command, Atlantic Division. In all, 39 buildings were demolished and were replaced by various new facilities, including a public works building, a parking garage, gymnasium and a central energy plant. Ninety percent of the site utilities were replaced.

RADM Kubic - NAVFAC's Vice Commander

Rear Admiral Chuck Kubic assumed responsibilities as Vice Commander, Naval Facilities Engineering Command in April 1998. He previously served as Commander, TWENTY-SECOND Naval Construction Regiment from June 1997, and as Vice Commander, Atlantic Division, Naval Facilities Engineering Command, Norfolk, Virginia from August 1994.

Born in Greensburg, Pennsylvania on December 7, 1950, he attended Lehigh University in Bethlehem, Pennsylvania. He graduated Phi Beta Kappa at the head his class in 1972 with a Bachelor of Science degree in Civil Engineering. Ensign Kubic received his commission in the Civil Engineer Corps in November 1972 through the Reserve Officer Candidate Program.

RADM Charles R. Kubic

From 1973 to 1975, Ensign Kubic was assigned to the Officer in Charge of Construction, Thailand, where he coordinated construction throughout Southeast Asia. Lieutenant (junior grade) Kubic was assigned to Naval Mobile Construction Battalion FOUR from 1975 to 1977 and served as Bravo Company Commander, Training Officer, and OIC of the Guantanamo Bay Detachment.

Lieutenant Kubic was selected as a Chief of Naval Operations Scholar and pursued postgraduate work at Lehigh University. He received a Master of Science degree in Civil Engineering in 1978.

Lieutenant Kubic was assigned to the Bureau of Naval Personnel as the Civil Engineer Corps junior officer detailer in 1978. From 1980 to 1982, he was the Assistant Public Works Officer at the Bethesda Naval Medical Center. Lieutenant Commander Kubic was then assigned to the Officer in Charge of Construction, Mediterranean in Madrid, Spain where he served as Assistant OICC for Design and Project Management until 1985.

Lieutenant Commander Kubic was selected as a White House Fellow in 1985 and served on the White House Staff as Senior Policy Analyst for President Reagan's Domestic Policy Council. From 1986 to 1989, Lieutenant Commander Kubic was assigned to the Naval Facilities Engineering Command, where he served as Director, Strategic Programs Office and Program Coordinator for the Strategic Homeporting and Trident military construction programs. From October 1988 through February 1989, Commander Kubic was detailed to the White House Office of Policy Development and served as Senior Staff Member for transition coordination.

Commander Kubic served as the Commanding Officer of Naval Mobile Construction Battalion THREE from August 1989 to August 1991. Under his command, NMCB THREE made operational deployments to the Mediterranean and South Pacific and was awarded two Humanitarian Service Medals. From September 1991 to July 1994, Commander Kubic served as Production Officer for the Navy Public Works Center, Norfolk, Virginia.

Rear Admiral Kubic is a qualified Seabee Combat Warfare Specialist, a licensed professional engineer in the Commonwealths of Pennsylvania and Virginia, and a certified level III contracting officer. In 1995, he graduated from the Advanced Management Program at the Wharton School of the University of Pennsylvania. He is a member of the National Society of Professional Engineers, the Society of American Military Engineers, and the U.S. Naval Institute. Rear Admiral Kubic's awards include the Legion of Merit, Defense Meritorious and Meritorious Service medals, the Navy Commendation and Achievement medals, and the National Defense, Vietnam, Armed Forces, and Humanitarian Service medals.

Seabees Help Hurricane Victims in Honduras

Since Nov. 7, an estimated 500 Seabees from Naval Mobile Construction Battalion Seven, based in Gulfport, Miss., and the Twenty-second Naval Construction Regiment, based in Norfolk, Va., have deployed to Honduras, in Central America, to support Hurricane Mitch disaster relief efforts. As the first Navy element to arrive in Honduras, the Seabees were ready with the same tools and equipment they used to cleanup the island of Puerto Rico in the aftermath of Hurricane Georges' destruction.

The Seabees conducted engineering reconnaissance, repaired or replaced roads, installed bridges, cleaned debris and constructed base camps. They built a 500-person camp for use by U.S. personnel at the Soto Cano Air Base. The camp includes 50 berthing tents, two shower units, and laundry and administrative tents.

Additionally, on 17 November, Naval Facilities Engineering Command, Atlantic Division, deployed three engineers to Honduras to assist the U.S. Southern Command with disaster recovery efforts. They provided engineering design support for Army, Navy and Air Force engineer units working on base camps, medical facilities, sewage treatment facilities, and roads and bridges.

NAVFAC Selects 1999 Engineers of the Year

The Naval Facilities Engineering Command named Luis Javier Malvar as the civilian selectee and Lieutenant Kirsten L. Nielsen, CEC, USN, as the military selectee for the 1999 Engineer of the Year awards.

Malvar's major contributions include program implementation and his in-depth understanding of the non-destructive evaluation technique and the Linear Elastic Evaluation Program for determining the load-bearing capacity of airfield pavements. This resulted in a major change in the way data is interpreted and used by personnel to make recommendations concerning the suitability of airfields to meet mission requirements. This effort has removed a large portion of the overly conservative findings in the assessment process and saved a considerable amount of money used for pavement repairs. The knowledge that was applied to an analysis of the runway at Naval Air Station Point Mugu, Calif., saved $22 million in repairs.

Dr. Luis Javier Malvar

He responded quickly to an emergency situation on San Nicholas Island, where heavy rains undermined the airfield and caused an F-4 aircraft to punch through the pavement. At the request of the activity and Naval Facilities Engineering Command, Southwest Division, he led a team to the island to collect and analyze the required data. Malvar's timely recommendations kept the airfield operational. Because of his efforts, accurate and clearly coded color charts depict the condition of airfields, which enables key personnel to know at a glance which portions of the airfield are safe.

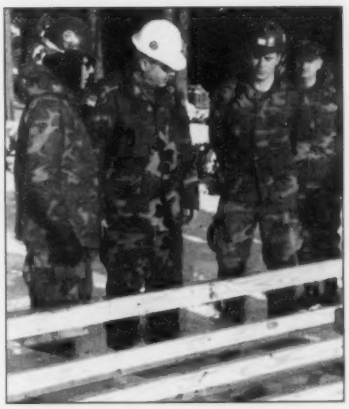
LT Nielsen spearheaded a station energy management and awareness program, which produced $41,000 in cost avoidance and contributed to a significant decrease in power consumption.

LT Kirsten L. Nielsen

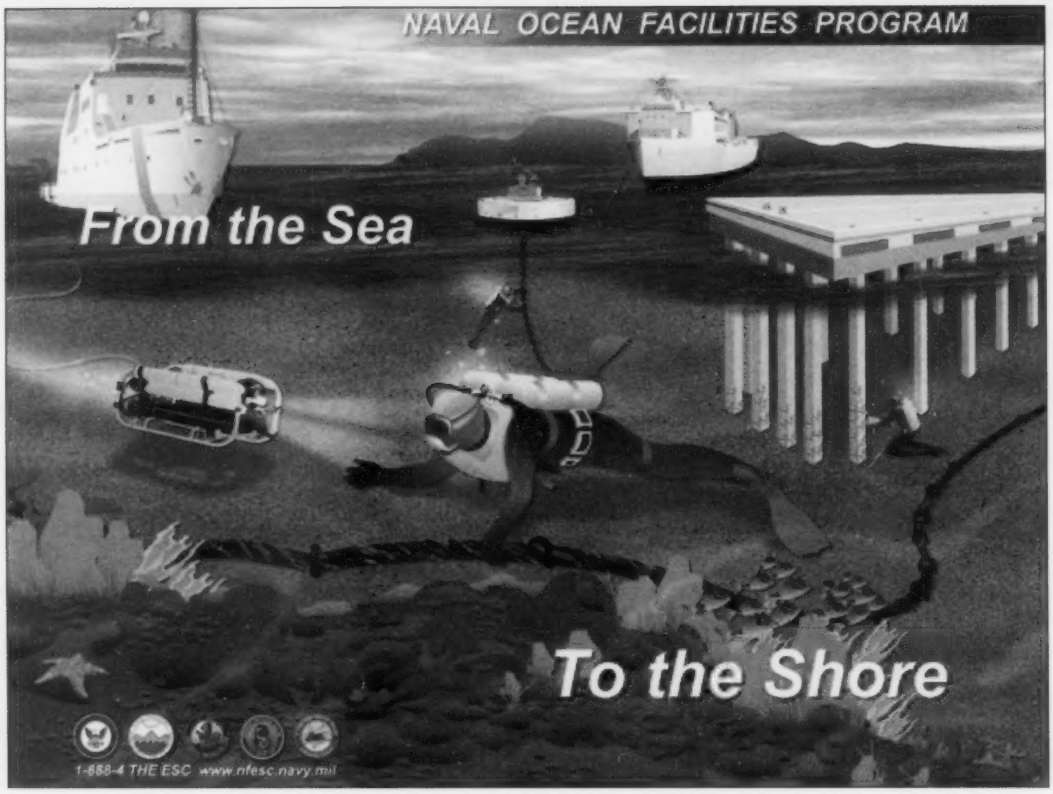
She developed and executed 40 self-help construction and repair projects for the installation of materials and achieved a labor savings of $90,000, with more than 50 percent of productivity provided by non-Seabee "self-helpers."

LT Nielsen oversaw the development of the public works performance work statement for the station Commercial Activities Program. She also achieved implementation of the use of the new government purchase card for construction projects, which will greatly improve support to customers and provide faster response for required material.

RADM Smith visits Seabees in Bosnia for Christmas holiday



Left: Rear Admiral Louis M. Smith listens to a tactical convoy brief from Naval Mobile Construction Brigade (NMCB) 40 convoy commander. Right: RADM Smith discusses a SEAhut project with Seabees from NMCB 40.



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Commander, Naval Surface Reserve Force (Code N53)
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Millington, TN 38055-4413
(901) 874-4034
p4413d@persnet.navy.mil

LT Robert Martinazzi II, CEC, USN
SOUTHWESTDIV, Code 09X
1220 Pacific Highway
San Diego, CA 92132-5100
(619) 532-3859
accessions@efdswest.navfac.navy.mil

LT Maria L. Alvarez, CEC, USN
LANTDIV, Code 09B2
1510 Gilbert St.
Norfolk, VA 23511-2699
(757) 322-4529
alvareml@efdlant.navfac.navy.mil

OR CALL:
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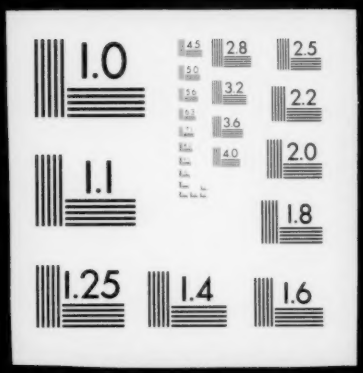
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